

# Methods and Apparatus for Encoding a Video Signal

## ABSTRACT OF THE DISCLOSURE

5           The present invention relates to systems and methods for compressing, decompressing, and transmitting video data. The systems and methods include pixel by pixel motion estimation and compensation and efficient quantization of residual errors. The present invention applies block estimation of the residual error produced by motion  
10        blocks of video data. The block estimation approximated uses a set of predetermined motion estimation errors that are stored as error vectors in a codebook. The codebook is included in an encoder of the present invention and converts an error vector for each block to an error vector index. The error vector index, which introduces minimal transmission burden, is then sent from the encoder to a target decoder. A receiving decoder also includes  
15        a copy of the codebook and converts the error vector index to its associated error vector for reconstruction of video data.